The association between baseline quadriceps strength and worsening of WOMAC function score

Sex	N Per Tertile (% with Progression)	Tertile of Strength	Odds Ratio	95% CI	p-value
Men	274 (6.5)	High	(Referent)		
	277 (5.5)	Middle	0.69	(0.32, 1.46)	0.3145
	277 (6.1)	Low	0.68	(0.34, 1.42)	0.3241
Women	437 (4.4)	High	(Referent)		
	432 (4.2)	Middle	0.97	(0.49, 1.92)	0.9308
	425 (6.4)	Low	1.58	(0.82, 3.03)	0.1685

Conclusions: Quadriceps weakness was not associated with an increased risk for worsening of knee pain severity or worsening self-reported physical function over 30 months in either men or women. For the goals of minimizing risk for impairments and functional limitations, these data do not appear to support the importance of maintaining adequate quadriceps strength in men and women with or at increased risk for knee OA.

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SERUM OPIOID MONITORING IN OSTEOARTHRITIS PATIENTS WITH CHRONIC PAIN: THE SEARCH FOR SENSITIVE BIOMARKERS

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Background: Osteoarthritis (OA), a common, minimally inflammatory rheumatological syndrome characterized by chronic joint pain and dysfunction, the primary symptom of OA is pain that is seen as entirely linked with function, with physical movements triggering pain, while pain, in turn, causes limitations in physical function. Chronic pain has been associated with augmented circulating catecholamines (CAs) and bradykinin. The presence of natural antibodies (NA) regarding specificity and have gained increasing attention in proteome analysis for developing, monitoring and effective treatment of OA.
Objectives: The objective of the study was to test of natural antibodies against serum proteins relevant to pain (dopamine DA, adrenaline AD, noradrenaline NA, bradykinin BK) expression on chronic osteoarthritis pain.
Methods: We evaluated 75 individuals with chronic pain (>3 months) due to OA. Pain was moderate to severe (>4 of 10), as self-assessed with Likert scale (0 to 10) using a daily pain diary for 2 wk before outpatient screening assessment. The clinical diagnosis of OA was further confirmed using Kellgren and Lawrence radiographic scoring criteria. 75 healthy individuals without OA or other pain syndromes, of similar age and body mass index (BMI), were evaluated as control subjects Table 1. We compared circulating concentrations of NA against CAs, BK in the using express ELISA protocol (INR).
Results: We detected significantly higher concentrations of DA-IgG and BK-IgG in OA patients compared with healthy control. In addition, we found significant relationships between serum DA-IgG and BK-IgG in patients with chronic, moderate to severe OA pain. Elevated DA-IgG was significantly correlated with BK-IgG ($r = 0.91$; $P < 0.005$) and VAS ($r = 0.75$; $P < 0.001$) in OA patients. There were no statistically significant differences in mea values for NA to AD and NA in OA patients, compared with healthy control subjects.
Conclusions: Evaluated together DA-IgG and BK-IgG, they can give important information about immune system functioning, especially relating to pain and vascular homeostasis. High throughput technology has made major contributions to the study autoantigen-antibody systems as serological markers of pain in OA. Quick and easy to perform ELISA test for detect DA-IgG/BK-IgG can be routinely used in clinical laboratories. Our results have potential applications for controlling unwanted pain and future response to therapy in OA patients.

Table 1. Baseline characteristics

Age (yr)	54±8.8	51±11.1
BMI (kg/m^2)	26±2.5	26±3.3
Duration of OA (yr)	13.0±9.8	
Pain (visual analog) scores	5.46±2.15	0.00±0.00
Beck Depression Index	5.56±5.69	1.00±1.86

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OSTEOPONTIN LEVEL IN SYNOVIAL FLUID IS ASSOCIATED WITH THE SEVERITY OF KNEE JOINT PAIN

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Purpose: Osteopontin (OPN) is an O-glycosylated phosphoprotein which is synthesized in a variety of tissues and cells including chondrocytes and synoviocytes. Accumulating data indicated that OPN is involved in the process of inflammation, immunity, and bone metabolism. OPN knockout mice have already been created and shown that cartilage degradation is accelerated in the absence of OPN. Human studies revealed that OPN protein level increased in the synovial fluid from the patients suffering from OA and RA. These data strongly suggest that OPN is involved in joint homeostasis and in the pathogenesis of arthritis. However, the molecular functions of OPN in these processes are not yet extensively studied. Here we report that synovial fluid OPN level is associated with the severity of joint pain.
Methods: This study was approved by the Ethics Committee of this institute. All patients included in this study gave their full, written, informed consent for participation prior to the operative procedure. Tissue samples (synovial fluid and synovial membrane) were obtained from the patients who underwent anterior cruciate ligament reconstruction (ACL-R) or total knee arthroplasty (TKA) from January 2009 till October 2010 in our hospital (OA: 27 samples, female: 22 male: 5, range 51–90 year-old, average 77 year-old, ACL-R: 17 samples, female: 4 male: 13, range 18–47 year-old, average 27 year-old). OPN mRNA expressed in synovial membrane was quantified by RT-QPCR (Roche, Light Cycler 480, Germany). Total OPN protein levels in synovial fluid were quantified using OPN/OPN N-half ELISA kit (IBL, Japan) and compared them with clinical parameters such as Lysholm score (ACL-R), visual analogue scale (VAS, TKA), serum C-reactive protein (CRP) level, and macroscopic observation of cartilage degradation.
Results and Discussion: As previously reported, OPN mRNA expression level in synovial membrane and OPN protein level in synovial fluid were significantly increased in OA if compared with those of ACL-R.
In the ACL-R group, OPN protein level in synovial fluid was gradually decreased after the injury. We found that OPN protein level in synovial fluid was POSITIVELY associated with the severity of joint pain (Lysholm Score) although it was not statistically significant. Since OPN acts as a pro-inflammatory cytokines by enhancing migration, survival, phagocytosis, and pro-inflammatory cytokine production of macrophages, we hypothesized that OPN induces joint pain by promoting inflammation in the joint. To test this hypothesis, we investigated the correlation of OPN protein level in synovial fluid with serum CRP level. However, we did not observe any correlation between these two. Further analysis is required to elucidate if our hypothesis is correct or not. Since accelerated degradation of articular cartilage is observed in OPN knockout mice, we next investigated the correlation of OPN protein level in synovial fluid with the macroscopic observation of cartilage degradation. However, we also did not observe any correlation between these two parameters.
In the TKA group, most interestingly, OPN protein level in synovial fluid was NEGATIVELY correlated with the severity of joint pain (VAS) in OA patients ($R = -0.469$) but not with the serum CRP level by Pearson product-moment correlation coefficient analysis. These data represent stark contrast to those of ACL-R group, and further analyses is required to elucidate the roles of OPN in the regulation of knee joint pain.
Conclusions: Osteopontin level in synovial fluid was associated with the severity of joint pain. In the ACL-R group, it is POSITIVELY associated with the severity of joint pain, however, NEGATIVELY correlated in the TKA group.

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IDENTIFYING PAIN VULNERABILITY PHENOTYPES IN OSTEOARTHRITIS

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Purpose: Joint symptoms do not correlate perfectly with structural damage in osteoarthritis (OA), and it is known that psychosocial issues,